BIOSPHERIC SCIENCES BRANCH HIGHLIGHTS
September - October 2008

- SCIENCE POLICY AND TEAM MEETINGS, WORKSHOPS

** Anyamba attends FAO/WHO Brainstorming workshop

Joint FAO/WHO Rift Valley Fever Outbreaks & Forecasting Models:
Brainstorming Workshop,

Assaf Anyamba, Code 614.4, attended the Joint FAO/WHO Rift Valley Fever Outbreaks & Forecasting Models: Brainstorming Workshop, September 29 – October 1, 2008, FAO Headquarters, Viale delle Caracalla, Rome, Italy. His presentation involved "Forecasting RVF outbreaks in Africa and the Middle East: Experience from the last decade and critical review". The workshop was jointly organized by Dr. Stephan De La Roque (Food and Agricultural Organization of the United Nations: FAO-UN) and Dr. Pierre Formenty (World Health Organization: WHO). The purpose of workshop was to review and share experiences from recent outbreaks (2006 – 2008), consider the creation of a common and approved RVF outbreaks database to challenge models and ameliorate risk maps; couple climate-forecasting models with RVF models and improve sharing of data with national authorities and training in countries vulnerable to RVF outbreaks.

** Middleton Participates in FLEX meeting

Dr. Betsy Middleton, Code 614.4, participated in the 8th panel meeting (Oct. 27-29, 2008) of the Fluorescence Explorer (FLEX) pre-phase-A ESA satellite mission concept. She serves as the panel's Outside Observer. The meeting was held at ESRIN in Frascati, Italy to prepare the materials for the final Assessment Report and supporting presentation to be submitted to ESA by mid-November. FLEX is one of six candidate Earth Explorer Core Missions; the competing missions are called A-SCOPE (regional CO2 fluxes), BIOMASS (global forest biomass), CoReH2O (water cycle), PREMIER (atmospheric trace gas chemistry), and TRAQ (air pollution). The final FLEX panel meeting will be held in conjunction with the Open Public Review of all six candidate missions, to be held in Lisbon, Portugal (Jan. 19-21, 2009).

** Brown attends WMO/Climate Prediction Center seminar

Molly Brown attended the World Meteorological Organization/ Climate Prediction Center's Open Seminar on 23 September, at NOAA Headquarters in Silver Spring, MD. The meeting was part of the World Meteorological Organization (WMO) Commission for Climatology (CCl) Expert Team (ET) meeting on Research Needs for Intraseasonal, Seasonal and Interannual Prediction, including the Application of these Predictions, a part of CCl Open Programme Area Group on Climate Information and Prediction Services (CLIPS). The meeting was hosted by the U.S. Department of Commerce (DoC), National Oceanic and Atmospheric Administration (NOAA), and Climate Prediction Center (CPC) at the National Weather Service (NWS) Headquarters.

- FUNDED RESEARCH

** Anyamba co-authors two publications

Chretien, J-P., Anyamba, A., Small, J., Tucker, C. J., Britch, S. C. and Linthicum, K. J. (2008) Extreme Weather and Epidemics: Rift Valley Fever and Chikungunya Fever. In Global Climate Change and Extreme Weather Events: Understanding the Contributions to Infectious Disease Emergence. Institute of Medicine, The National Academies Press, Washington, DC. Pp. 116-128.

Also contributed cover page of the above publication.

Martin , V., V. Chevalier , P. Ceccato , A. Anyamba, L. De Simone , J. Lubroth , J. Domenech , J. and S. de La Rocque (2008) Climate Change: the Impact on the Epidemiology and Control of Rift Valley Fever. In S. de La Rocque, G.Hendrickx & S. Morand (eds.) Climate Change: Impact on the epidemiology and control of animal diseases. Scientific and Technical Review. Office International des epizooties, 27(2): 413-426.

** Bounoua lead author on important paper on urban growth and the impact on surface climate

Dr. Lahouari Bounoua leading a team of NASA scientists from the Biospheric (614.4) and the Hydrological (614.3) sciences branches published an interesting paper on urban growth and its impact on surface climate in a semi arid region of North Africa. The work included a collaborator from the Algerian Space Agency Dr. A. Safia. Results from this work indicate that unlike in temperate climates where urbanization creates a strong heat island effect, in semi-arid regions its impact does not result in a marked contrast with its surrounding composed mainly of bare soils and sparse vegetation. An interesting aspect of this research is that given a certain population to support, and a regional climate regime, it should be possible to formulate the "ideal" organization of land-cover elements to produce a desired microclimate. The paper, which addresses new aspects of the urban climate problem, has received an excellent review and is noted as a significant contribution to the literature. The paper is published on the Journal of Applied Meteorology and Climatology of the American Meteorological Society.

"Impact of urban growth on surface climate: A case study in Oran, Algeria"
L. Bounoua. A. Safia, J. Masek, C. Peters-Lidard, M. L. Imhoff

The Online publication of the paper can be found at:
http://dx.doi.org/10.1175%2F2008JAMC2044.1

- SIGNIFICANT ACTIVITIES

** Biospheric Sciences Branch members receive three Robert Goddard Awards

At the ceremony on September 10th in Building 8, the following Branch members received awards for their work.

SCIENCE: Molly Brown

SAFETY: Don Deering

OUTREACH TEAM: Jeannie Allen, Anita Davis, and Laura Roccchio with the Landsat Project Science Office Education Team

The Branch extends congratulations for their hard work, dedication, and achievement.

** Anyamba participates in field studies in Kenya

Field Studies in Kenya to Develop Novel Methods to Protect Deployed Troops from Vector- borne Diseases such as Leishmaniasis (September 8 – 20, 2008)

The Deployed War-Fighter Protection (DWFP) Program is a Department of Defense-sponsored research program administered by the Armed Forces Pest Management Board. It is tasked with the development and testing of management tools for pest and vector species that transmit diseases to the deployed war-fighters. New and improved material and methods for pesticide delivery are needed by the armed forces to prevent diseases that threaten deployed troops. One of the most important diseases to military troops in the Middle East and Southwest Asia is Leishmaniasis. This disease, which occurs in both the New World and Old World, is caused by various protozoans in the genus Leishmania and they cause either ulceration of the skin or mucosal membranes, or a chronic systemic disease. In the Old World it is transmitted to humans by sand flies in the genus Phlebotomus. In conjunction with the US Army Research Unit – Kenya (CPT Jeff Clark and COL Scott Gordon) and the USDA-ARS Center for Medical, Agricultural, and Veterinary Entomology (Dr. Kenneth J. Linthicum [Team Leader] and Dr. Seth C. Britch) research was conducted at a field station in Marigat, Rift Valley, Kenya to determine if barriers created by camouflage netting treated with an insecticide would prevent penetration by sand flies in the hot and dry environments in Leishmania disease endemic areas of Sub-Saharan Africa. Knowledge of the environmental/ecological conditions is important to assess the persistence of insecticides on these barriers and on the population levels of the sand flies. NASA/GSFC is in a good position to offer remote sensing data in support of this work. Preliminary sand fly trap results indicate that treated nets were significantly better at reducing sand fly numbers than untreated control nets. Treating perimeters with residual insecticides might prove to provide protection to deployed troops and civilian populations from sand fly vectors.

** UMD/GSFC Applications Proposal Receives Letter of Support from Maryland Gov. O'Malley

A recent UMD/GSFC collaborative proposal submitted to the "Decision Support Through Earth Science Research Results" call for ROSES08 received a letter of support from the Governor of Maryland, Martin O'Malley. The proposal is entitled "Enhancing the Implementation of Winter Cover Crops in the Chesapeake Bay Watershed Using NASA Satellite Data" and aims to use Landsat and MODIS satellite information to produce annual croplands information/data on croplands across the Chesapeake Bay Watershed (CBW), including the detection of winter cover crops. These data are expected to feed a Decision Support System within the Chesapeake Bay Program and the State of Maryland that will assist in prioritizing high-risk areas for winter cover crops planting. Winter cover crops are recognized as one of the best management practices that can substantially reduce the runoff of nitrogen and other nutrients into the Bay. The Principal Investigator of the proposal is Andrew Elmore (UMD/Center for Environmental Science). Co-Is from GSFC are Eric Brown de Colstoun (Code 614.4/UMBC/GEST) and Michael Van Steenberg (Code 604.0). Collaborators from GSFC are Jim Irons (Code 613.0) and Jeff Masek (Code 614.4). The proposal also includes Co-Is from NOAA and USDA-BARC.

** Middleton to serve as Associate Editor of Journal of Applied Remote Sensing

Betsy Middleton accepted an invitation extended by Dr. Wei Gao, Editor-in-Chief of the Journal of Applied Remote Sensing (JARS), to serve a 3-year term as an Associate Editor. JARS is a peer reviewed “electronic-only” interdisciplinary journal published by SPIE—The International Society for Optical Engineering.

JARS offers multimedia and free online color, using author-prepared files to eliminate traditional typesetting. Papers are published online almost immediately upon acceptance. In addition to full technical articles, JARS intends to publish letters.

** Molly Brown gives invited talk at NAS

Brown gave an invited talk to the National Academy of Sciences' Government-University-Industry Research Roundtable October meeting on October 23, 2008. The meeting's topic was 'Food Security – Global Challenges and Directions'. The Government-University-Industry Research Roundtable provides a platform for leaders in science and technology from government, academia, and business to discuss and take action on scientific matters of national importance. These include issues facing partnerships between government, universities, and industry, the academic research enterprise, training of the scientific workforce, and the effects of globalization on U.S. research. The talk was entitled 'Anticipating Food Shortages using Satellite Data: examples from the Famine Early Warning Systems Network (FEWS NET)', by M.E. Brown, C. Funk and J. Verdin.

** James Butler and Jack Xiong (614.4) attended SPIE Europe Remote Sensing Conference at Cardiff, Walles, UK (15-18 September 2008).

They presented 3 papers: (1) Status of Aqua MODIS instrument operation, calibration, and performance, (2) Using Dome C for MODIS calibration and characterization, and (3) Calibration of a radiance standard for the NPP/OMPS instrument at the conference on Sensors, Systems, and Next-Generation Satellites. This conference has dedicated sessions on NASA missions, ESA missions, JAXA missions, and Calibration.

** Molly Brown meets with Public Affairs and DDCS

Molly Brown as a member of the Deputy Director's Council on Science (DDCS) met with Marc Hess and Wade Sisler from the Public Affairs office along with Laurie Leshin, Goddard Deputy Director, and Matt Rodell and Philip Webb also part of the DDCS on September 25th. Ways were discussed to improve the visibility of the PAO at Goddard, better metrics to measure its impact, and ways to increase participation of scientists at Goddard in education and outreach activities.

** Brown presents to GSRP on Climate Change and Food Security

On 9/26 Molly Brown gave a talk at the Graduate Student Researchers Symposium (GSRP) here at NASA Goddard on September 26 entitled 'Climate Change and Food Security: Role of NASA Earth Science Models and Observations'. Some info about the GSRP: 'The GSRP attempts to reach a diverse group of promising U.S. graduate students (most of which are pursuing the Ph.D. degree) whose research interests are compatible with NASA's programs in space science and aerospace technology. Each student has a Goddard Technical Advisor.

** Brown participates in Podcast about Terra Mission

On October 1 Molly Brown was interviewed by Lindsay Patterson at EarthSky for a podcast about the Terra Mission. The podcasts are distributed through the Earth Observatory as well as EarthSky's standard distribution methods (web site, NPR). The interview was about how the Famine Early Warning Systems Network uses Terra data to identify and respond to food security crises in Africa. It can be found at: http://www.earthsky.org/clear-voices/52824/molly-brown-on-early-warning-for-famine